soniKKs
ULTRASONICS TECHNOLOGY

User Guide
Display and Firmware
Generator model “W“
with touch screen

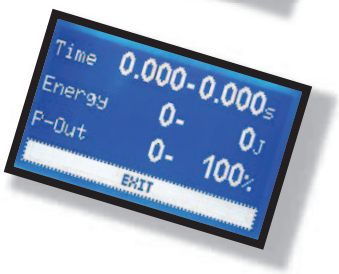

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Table of contents

Table of contents 2

Calibration of the touchscreen 4

Parameters' security 4

Status LEDs 5

Navigation chart 6

Menu items and operation 8

1. Frequency display – "Start screen" 8
2. Overview 9
3. Settings – "MENU" 9
   - 3.1. Op. Modes 10
   - 3.2. Cycle Welding 11
   - 3.3. Amplitude 11
   - 3.4. F start - Start frequency 12
   - 3.5. Monitor 13
   - 3.6. Nominal 14
   - 3.7. Offsets 15
   - 3.8. Presets 16
   - 3.9. Error Log 16
   - 3.10. Security 17
   - 3.11. Display 17
   - 3.12. Date / Time 18
   - 3.13. Screens 18
   - 3.14. Testbutton / Remote 19
   - 3.15. Relays 20
   - 3.16. Handheld mode 20
   - 3.17. Sensorics 20
   - 3.18. Info 21
   - 3.19. Window 21
   - 3.20. Setup 21
   - 3.21. Factory 22
4. User Mode 22
   - 4.1. "Weld" user mode 23
   - 4.2. "Lab" user mode 24

Cycle welding mode 25

1. Purpose of the feature 25

2. Status LEDs 25
3. Testbutton function 26
4. Beeper 26
5. Parameters of the welding cycle 26
6. Timing chart 27
Handheld mode 28
1. Start Screen 28
2. Presets Screen 29
Fault report and fault clearance 30
Change history 31
Maintenance and care 32
Warranty 32
Imprint 33

Calibration of the touchscreen

To re-calibrate the touchscreen, power-cycle the generator while you keep the touchscreen pressed. On the display appears the message "calibration mode – touch to start". Just follow the on-screen instructions and touch the markers on the screen. If the process is finished the display shows "calibration complete – touch to start the application". Answer the question whether you want to use a rotary encoder or not with "No".
It may be necessary to repeat the process to get satisfactory results.

Parameters' security

To protect the device, and consequently the production flow, the unit features a unique three-level security concept based on numeric passwords.

Every user can perform basic operations like setting the display's contrast. However, a password must be entered for the process-relevant parameters to be modified. The passwords can also be disabled for a better ease of use.

There are three distinct password levels:

- Level 1 – "User settings"
- Level 2 – "Advanced settings"
- Level 3 – "Reseller settings"

The level 3 password cannot be disabled or modified via the touchscreen. Indeed, it is reserved to the reseller and thus not known by end users. If any problems occur, please contact our service.

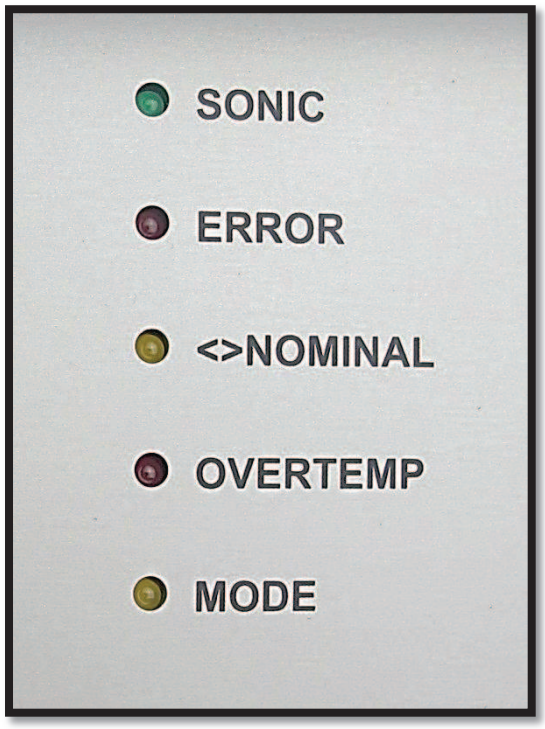
Which passwords are required for which parameter is depicted in the navigation chart (see chapter Navigation chart).

Once an access to a security level has been granted, it remains unlocked for 60 seconds from the last input (recognizable thanks to the lock symbol). Of course, higher level securities are still active. After this period, the device locks itself against unauthorized manipulation. If you want to lock the device instantly, touch the lock symbol in the bottom left corner of the Start screen.

See chapter 3.10 for more information.

Status LEDs

"Sonic" LED	ON: ultrasonic power is active.
"Error" LED	ON: there is a malfunction of the generator.
"< > Nominal" LED	ON: a monitoring function has been set and the requested condition was not met during the last run. Conditions are power, time or energy windows.
"Overtemp." LED	➔ ON: the generator is overheating and the over temperature fuse has shut off the generator. ➔ Blinking: the generator was shut down during the last welding process due to over temperature. The LED turns off if you start the generator again.
"Mode" LED	➔ ON: the generator is set to stop after a predetermined condition is reached. These conditions are time or energy. ➔ Blinking: one (or more) welding cycle parameter is set
"Output %" gauge	Indicates the effective ultrasonic power in steps of 10% of the nominal power.



Navigation chart

Menu items (continued)

Info

Shows data

Window

Window error
"on" / "off"

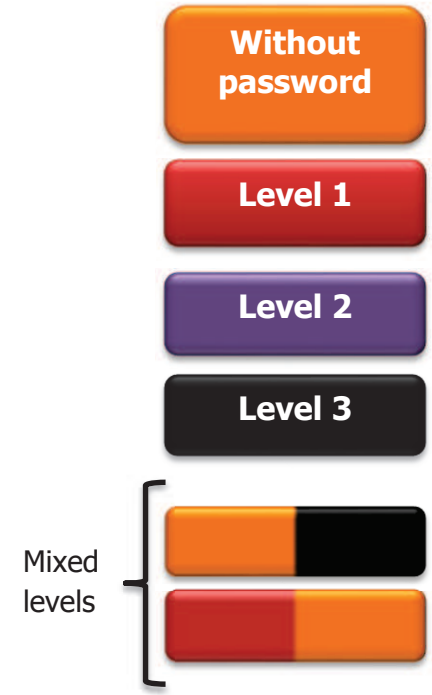
Setup

Language
User Mode

Factory

Restore factory settings

Security levels :

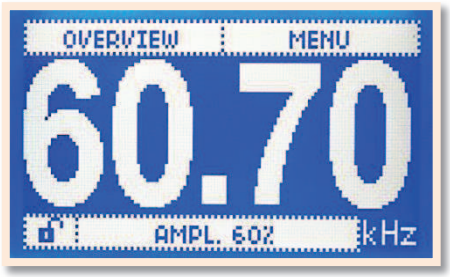


Menu items and operation

The navigation is operated by a **resistive touchscreen**. All inputs are done via pictured buttons, which the user simply has to tap. Hereby you profit from a comfortable handling, simplifying the input and navigation.

It often can be helpful to use a pencil for input and confirmation, as the buttons are sometimes rather small. However, you must pay attention that the pencil is not too sharp. We recommend special touch-pencils or ball-pens out of plastic with plugged-in needle. Ball-pens out of metal can scratch the display and thus are not recommended. Moreover the use of a pencil (plumb) or a felt pen is disadvantageous, because they often leave color.

1. Frequency display – "Start screen"



The Start screen displays the current working frequency in big digits. If the generator is not delivering any sonic, then the starting frequency is displayed.

By touching the frequency value you enter the "F start" menu item, in which you can adjust the starting frequency as described in chapter 3.4.

"OVERVIEW" leads to the Overview screen → see chapter 2.

"MENU" opens the settings menu → see chapter 3.

The lock symbol shows if the passwords are active or not. An open padlock indicates that the passwords are inactive, whereas a closed padlock indicates that the passwords are active. For more information → see chapter 3.10.

The "AMPL. xx%" label indicates the current amplitude. Touching this area will open the "Amplitude" menu item → chapter 3.2, for adjusting the amplitude.

2. Overview

The Overview screen gives the following parameters:

- The current working frequency or the start frequency if no sonic is being emitted → F start
- The current emitted power
- The elapsed time → Op. Modes
- The emitted energy → Op. Modes

Touching frequency, timer or energy yields to the input screens of the corresponding nominal values.

An on-screen testbutton allows testing the current configuration and starting the generator manually. The test button can be configured or disabled using the "." menu item.

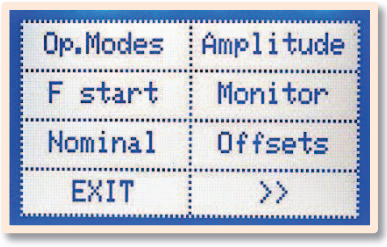
The top left area ("BIG FREQ") leads back to the main screen.

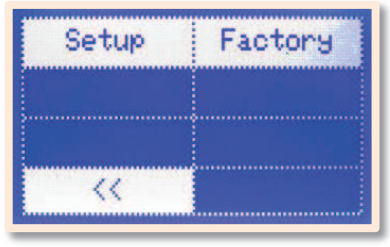
The other buttons ("MENU", "LOCK", "AMPL. xx%") behave the same way as they do in the Start screen.

3. Settings – "MENU"

The menu shows all currently activated menu items.

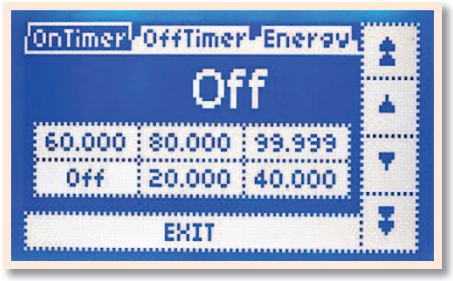
The selection is carried out by tapping a menu item. The "EXIT" button allows getting back to the Start screen. The ">>" and "<<" buttons allow scrolling through the different pages of the menu.





Please note that the « Operation Modes » screen is replaced by the « Cycle welding » screen if your generator is configured for cycle welding.

3.1. Op. Modes



The generator features two special operating modes:

- Welding on time
- Welding on energy

Both operating modes can be used simultaneously and are indicated by the Mode LED.

In this menu item you can navigate through three tabs ("On Timer", "Off Timer" and "Energy") and determine your desired values.

- ✓ "On Timer" defines the time after which the generator stops emitting ultrasonic power.
- ✓ The activation of the "Off Timer" is optional. It puts the generator in pulse operation (on-off-on-off). With this parameter, you set the time after which the generator turns back on.
- ✓ "Energy" activates the "welding on energy" mode. If the here predetermined energy value is reached, the generator turns off automatically.

If a Timer and an Energy values are both set, the generator turns off as soon as one of these values has been reached.

The adjustment of the values in every "Data input screen" is done the same way. 6 example values are arranged in an array, where the bottom left value is the minimum and the top right value the maximum. The arrow keys on the right side allow for coarse tuning (double arrows) and fine tuning (simple arrow).

"On Timer" and "Off Timer"	
valid interval	0(=off) to 99.999 s
single arrow	steps of 1
double arrow	steps of 100

"Energy"	
valid interval	0(=off) to 9999 J
single arrow	1 Joule
double arrow	100 Joule

The "EXIT" button leads back to the settings menu.

3.2. Cycle Welding

If your generator is configured as a cycle welding one, this screen will replace the "Op. Modes" screen. Here, you will be able to configure the timings of your welding cycle. Moreover, note that the "welding on energy" mode is also available.

- Delay: the time between the user's start request (remote activation) and the moment the generator starts welding.
- Weld. T/E: welding time (= "On Timer") and welding energy (see "Op. Modes" section).
- Hold: a delay after the generator has stopped emitting. The press then holds the parts together to let the weld cool down.
- Afterburst: the duration of an additional HF burst (optional). This final burst is used to clean the sonotrode.

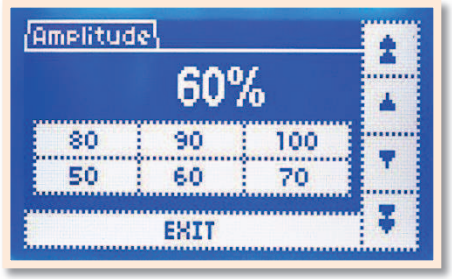
Tap the value of your choice to modify it.

Please refer to the Welding cycle mode section for further information (especially the timing chart).

3.3. Amplitude

In this menu item you can adjust the desired amplitude.

The adjustment of the values in every "Data input screen" is done the same way. 6 example values are arranged in an array, where the bottom left value is the minimum and the top right value the maximum. The arrow keys on the right side allow for coarse tuning (double arrows) and fine tuning (simple arrow).



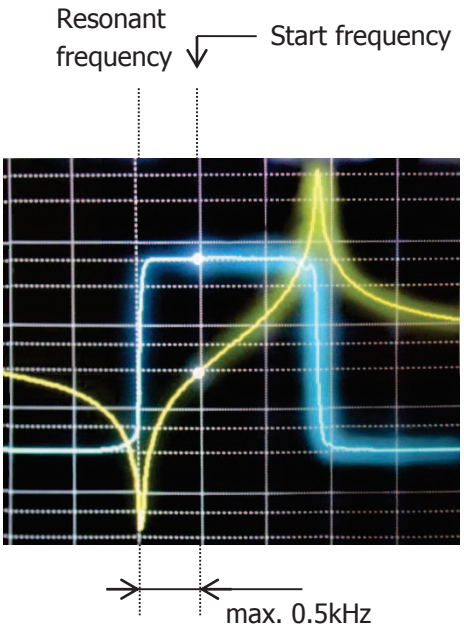
"Amplitude"	
valid interval	50 to 100 %
single arrow	steps of 1 %
double arrow	steps of 10 %

The "EXIT" button leads back to the settings menu.

3.4. F start - Start frequency

ATTENTION:
The start frequency should be modified by experienced personnel only. An incorrect adjustment could damage the generator. Make sure to follow the advice given in this section.

First, let us be clear about what the "Start frequency" represents. When the generator is turned on, it starts emitting ultrasonic power at a certain frequency: the start frequency, hence its name. Then, the generator endeavors to tune the operating frequency to the resonant frequency of the connected transducer system. This **auto-tuning function** works downwards only, which means that the generator will be scanning a limited range of frequencies **below the start frequency**.

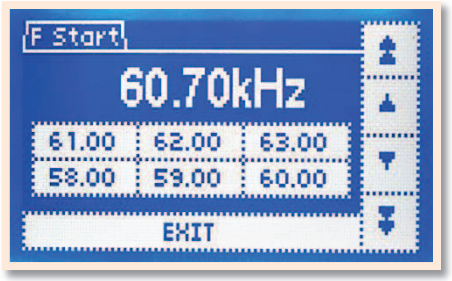


The graph on the right shows the behavior of the impedance of a transducer in function of the excitation frequency (yellow curve). The resonant frequency is reached at the point of lowest impedance.

Setting the start frequency too close to the resonant frequency of the system might cause the error "amplitude protection active". In this case please set the start frequency to a higher value (see also "Troubleshooting").

On the other hand, setting the start frequency too high could cause the generator not to find the resonant frequency since the scan range is limited. In this case, the generator could emit at a wrong operating frequency, which could be harmful to the equipment.

Ideally, it should always be set to 0.5kHz higher than the resonant frequency of the transducer system. If the latter is unknown, use the originally set start frequency (depending on model).



Starting frequency "f start"	
valid interval	Depending on model
single arrow	steps of 10 Hz
double arrow	steps of 100 Hz

The "EXIT" button leads you back to the settings menu.

3.5. Monitor

The generator features monitoring functions. With those, it is possible to control a welding process on:

- Time
- Energy
- Power

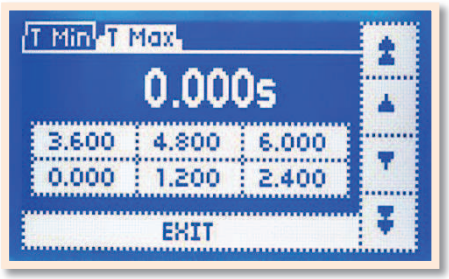
You can define windows that are bounded by threshold values. If one of the operating values exceeds its window, the "<> Nominal" LED will turn on. You can also configure the device to signal an error (see "Window" menu-item).

This function can especially be used to detect if no transducer is connected to the generator. In this case, the power and energy at the end of the run will be null. You can detect this anomaly by setting an energy and/or power minimum threshold to a value higher than zero.

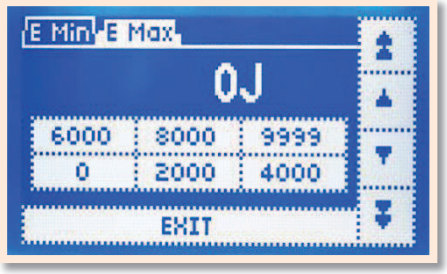
This screen enables you to modify the limits of the windows. Note that the min/max values constrain each other, i.e. a minimum value can never be higher than a maximum value. The generator will automatically adapt the peer value if necessary. Tap the value of your choice to modify it.

The adjustment of the values in every "Data input screen" is done the same way. 6 example values are arranged in an array, where the bottom left value is the minimum and the top right value the maximum. The arrow keys on the right side allow for coarse tuning (double arrows) and fine tuning (simple arrow).

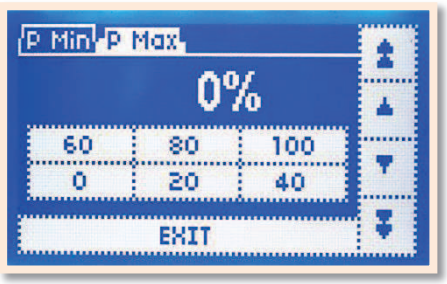
- ✓ "T Min" , "E Min" und "P Min" set the lower limit
- ✓ "T Max", "E Max" und "P Max" set the higher limit
- ✓ The monitoring function controls now whether the operating values correspond to the windows or not.



Time: "T Min" and "T Max"	
valid values	0.000 to 6.000 s
single arrow	steps of 1 mS
double arrow	steps of 100 mS



Energy: "E Min" and "E Max"	
valid values	0 to 9999 J
single arrow	1 Joule
double arrow	100 Joule



Output Power: "P Min" and "P Max"	
valid interval	0 to 100 %
single arrow	steps of 1 %
double arrow	steps of 10 %

The "EXIT" button leads back to the settings menu.

3.6. Nominal

In this menu item you can configure whether the nominal amplitude is tuned via an external voltage (analogically) or over the communication buses (digitally).

- ✓ If the "Analog" mode is selected, the amplitude can no longer be adjusted via the digitally. It is instead set via an external voltage 5-10V (standard) or rather 0-10V (user specific adjustment), corresponding to 50-100% amplitude.

  If you tap the "Amplitude" area in the "Start" screen or in the "Overview" screen in analog mode, the "Nominal" screen pops up. You can then modify the nominal source.

  If you enter the "Amplitude" screen in the settings menu, the device displays "Parameter not available". Before you can adjust the amplitude you have to change the mode to "Digital".

- ✓ If the "Digital" mode is chosen, the amplitude can be adjusted via the touchscreen, in the "Amplitude" screen, or over the communication buses.

Select the mode by tapping the corresponding area, or using the arrows on the right. The selected option appears above the array.

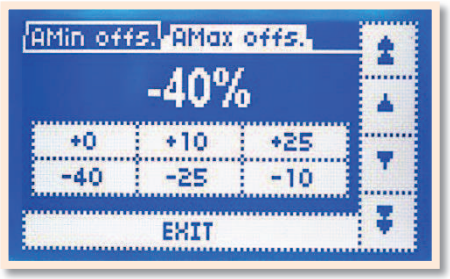
The "EXIT" button leads back to the settings menu.

3.7. Offsets

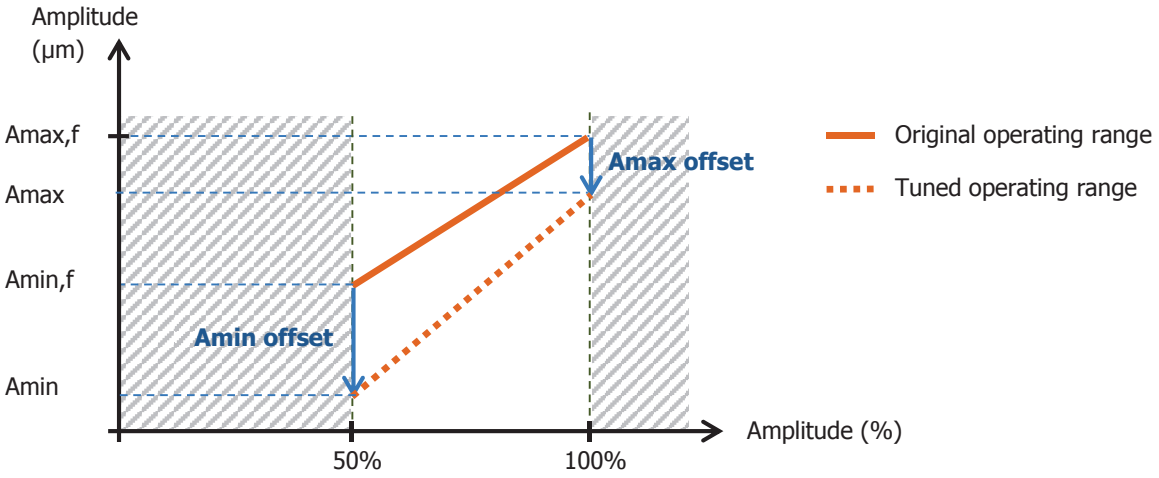
ATTENTION:
You must consult the manufacturer before you change these values. Danger of damaging the transducer system!

As explained in the "Overview" screen description (page 19), the amplitude of the vibrations of the sonotrode is adjustable from 50% to 100%. Those percentages correspond to two physical values **Amin** and **Amax** (expressed in **µm**), which are respectively the minimum and maximum amplitude.

This screen allows you to tune those two values by adding offsets to them. These offsets are called "A min offset" and "A max offset". They are given in the form of signed percentages of the maximal amplitude **Amax** (adjusted in factory). On the graph below, this value is called "Amax,f" where "f" stands for "factory".



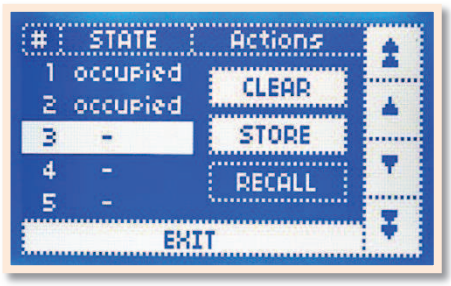
In this example, the user sets "Amin offset" to -40% and "Amax offset" to -20%. In this case, as shown on the graph, the minimum amplitude will be decreased by 40% of "Amax,f", while the maximum amplitude will be decreased by 20% of "Amax,f".



Proceed as usual to activate the adjustment mode and change the settings. The "EXIT" button leads back to the settings menu.

"AMin offs." and "AMax offs."	
valid interval	-40 % to +25 %
single arrow	steps of 1 %
double arrow	steps of 5 %

3.8. Presets



The generator offers the possibility to save one or more sets of parameters in order for them to be restored easily.

Therefore, 32 preset memory slots are available (0-31). The following parameters are saved:

- Amplitude
- Starting frequency
- Modes (Energy + Timer)
- Controls (Monitoring)
- Amin/Amax Offsets

At first, you select one of the preset memory slots by tapping it, or using the arrows on the right. The single arrow moves the cursor one step further with each touch, whereas the double arrow gives five steps.

Now you have the possibility to delete the memory slot with "**CLEAR"** if there is a preset. With **"STORE"**, you save the current adjustments in the selected slot. With **"RECALL"**, you restore the adjustments present in this slot.

The "EXIT" button leads you back to the settings menu.

NB: This screen is only available in the menu if the handheld mode is disabled (see Handheld mode section).

3.9. Error Log

The generator features a time stamped event log that logs errors and unusual system events to the non-volatile memory of the device.

This screen allows for easy access of the last 100 entries into this memory, each one having a timestamp and an error label or a numeric error code.

Use the arrows or the scroll handle to the right of the screen to page through up to 100 errors.

The "EXIT" button leads you back to the settings menu.

3.10. Security

Here you can change the security settings, e.g. switching the password function on and off.

If the password function is set to "Off", the screen looks like the picture on the right.

To **activate** the password function, tap "Off". A confirmation message will pop up for you to confirm/abort the process. Once you have confirmed, two additional parameters appear as shown on the right.

The level 1 and level 2 passwords can now be adjusted. By tapping the corresponding area, a menu will open, in which a numeric password for the chosen level is defined.

To **disable** the password function, tap the "On" area. Confirm the action by tapping "Yes" in the pop up.

The "EXIT" button leads you back to the settings menu.

3.11. Display

Here you can change the display's settings. You can navigate via three tabs between "Contrast", "Backlight" and "Beep" and modify the settings.

The adjustment of the values in every "Data input screen" is done the same way. 6 example values are arranged in an array, where the bottom left value is the minimum and the top right value the maximum. The arrow keys on the right side allow for coarse tuning (double arrows) and fine tuning (simple arrow).

Contrast	
valid interval	0(low) to 100%(high)
single arrow	steps of 1%
double arrow	steps of 10%

Concerning the **adjustment of the Backlight** you have the choice between the adjustments "Dim", "On" and "Auto".

- ✓ If you want the backlight to be active every time, select "On"
- ✓ If you want the backlight to turn off automatically after some time, select "Auto"
- ✓ To turn the backlight to a lower level, select "Dim"

Just touch the icon, showing your desired mode, to select it. The now selected adjustment appears as a heading above the touch icons. With the arrows on the right side the mode can also be modified. In doing so, single and double arrow have the same function.

Concerning the **adjustment of the beeper** there is the choice between the adjustments "On" and "Off". Just touch the icon, showing your desired mode, to select it. The now selected adjustment appears as a heading above the touch icons. With the arrows on the right side the mode can also be modified. In doing so, single and double arrow have the same function.

The "EXIT" button leads back to the settings menu.

3.12. Date / Time

This screen displays the current date and time set in the generator.

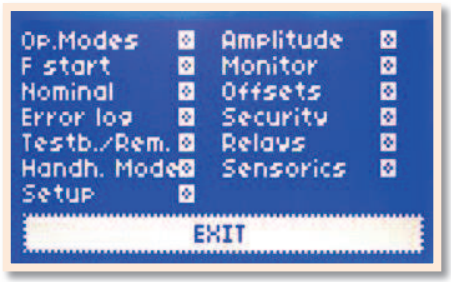
It is recommended to set date and time, because it is used for the error log and can simplify the diagnosis.

To **adjust** date and time, touch the arrows to increase/decrease the desired number (day / month / year / hour / minute). When you have finished settings these parameters, press the exit area to leave this screen.

The "EXIT" button leads you back to the settings menu.

3.13. Screens

In this screen you can selectively disable or enable menu items.
You enable or disable the individual menu items by touching the text or the check-box of the belonging menu.

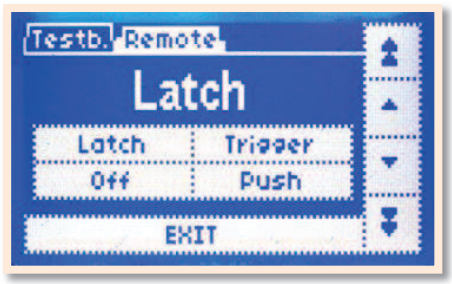


- ✓ If there is a cross in the box, the menu item is shown in the settings menu
- ✓ If there is no cross, the menu item is hidden

You can change the adjustments every time and thus modulate the settings menu to your exercise.

The "EXIT" button leads back to the settings menu.

3.14. Testbutton / Remote



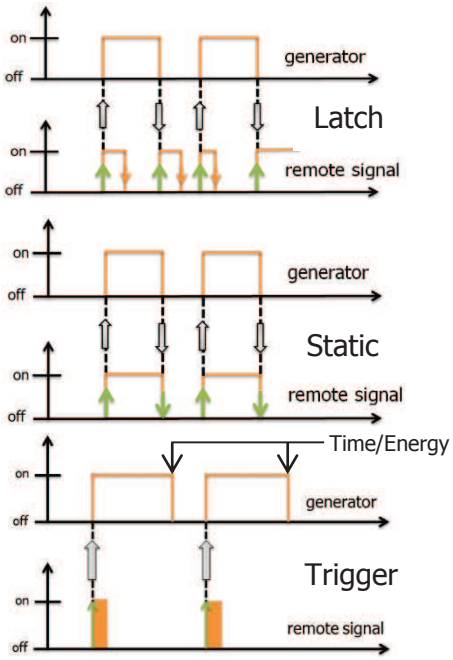
In this screen you can set the operation modes of the virtual testbutton and the remote signal. You can navigate via the tabs between "Testb.", "Remote".

Regarding the **Testbutton**, 4 modes are available: "Off", "Push" , "Latch" and "Trigger".

- ✓ "Off": the testbutton is disabled
- ✓ "Push": as long as you hold the button, the generator is on
- ✓ "Latch": tapping the virtual testbutton switches the generator on, tapping it again switches the generator back off
- ✓ "Trigger": this option is only recommended when at least one of the special operation modes (Timer or Energy) is used. A short pulse starts the generator. Then, the device automatically switches off when the predetermined time or energy is reached.

Tap the mode of your choice to select it. The now selected adjustment appears as a heading above the touch icons. With the arrows on the right side the mode can also be modified. In doing so, single and double arrow have the same function.

Different remote options are settable: "Latch", "Static" and "Trigger".



- ✓ "Latch": activating the remote switches the generator on, activating it again switches the generator back off
  → Storage function
- ✓ "Static": the generator directly switches on or off if there is a remote signal
  → No storage function!
- ✓ "Trigger": this option is only recommended when at least one of the special operation modes (Timer or Energy) is used. A short pulse starts the generator. The device automatically switches off when the predetermined time or energy is reached.

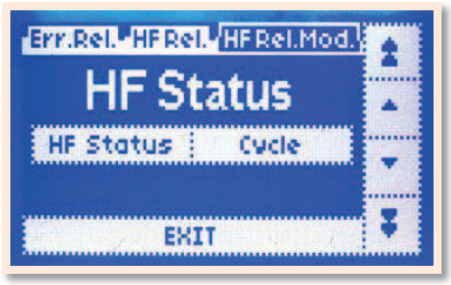
Just touch the icon, showing your desired mode, to select it. The now selected adjustment appears as a heading above the touch icons. With the arrows on the right side the mode can also be modified. In this case, single and double arrows have the same function.

The "EXIT" button leads back to the settings menu.

3.15. Relays

The generator features two internal relays that drive the error and HF outputs. In this screen, you can configure these output relays to act as a normally closed or normally open contactor.

- Normally closed: the output is low-active
- Normally open: the output is high-active

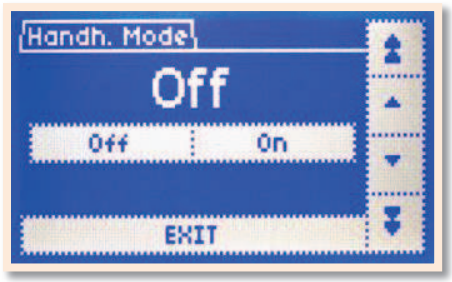


If your generator is configured as a cycle welding generator, a third parameter called "HF relay mode" will be available in this screen (see screenshot on the right). It allows configuring the behavior of the HF output.

- HF status : the HF output is active as long as ultrasonic power is being emitted.
- Cycle : the HF output is active as long as a welding cycle is ongoing.

NB: if your generator is not a cycle welding generator, it will come with the default setting, i.e. "HF status".

3.16. Handheld mode

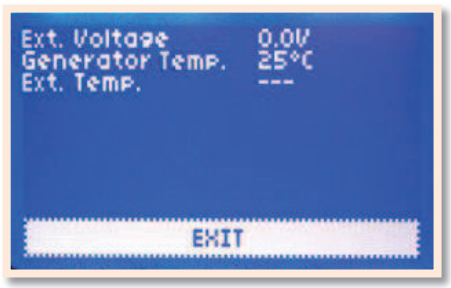


The generator features a special mode for hand-welding applications, which allows the user to scroll through the different presets by "double clicking" with the handgun's trigger.

This screen allows activating/deactivating this mode.

See the Handheld Mode section for more details.

3.17. Sensorics



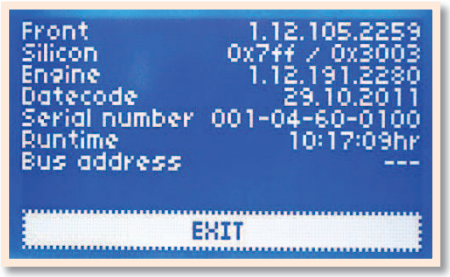
This screen displays various pieces of information gathered by the sensors present in the generator. In case your generator does not feature one of them, no value will be displayed at the corresponding line (see "Ext. Temp." on the right).

- Ext. Voltage = voltage applied to the interface pin

- Generator temperature
- Ext. Temp. = temperature measured by the external temperature sensor.

The "EXIT" button leads back to the settings menu.

3.18. Info

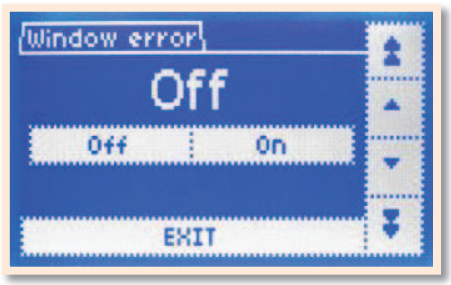


Here you can readout following data of the generator:

- "Front": front firmware version
- "Silicon": processor version
- "Engine": generator firmware version
- "Datecode": date of manufacture
- "Serial number" of the generator
- "Runtime"
- "Bus address" (if the Profibus option is available)

The "EXIT" button leads back to the settings menu.

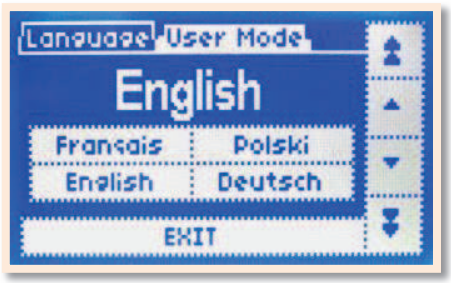
3.19. Window



The monitor function (page 13) enables you to set windows for time, energy and power. In case one of these operating values exceeds its window, you can choose to be notified with an error by activating the "window" error in this screen.

Please note that the error will only occur when the generator is operated remotely.

3.20. Setup



Here you can configure the "Language" used by the device and enable/disable the "User Mode" (see below).

Concerning the **adjustment of the language** you can choose between four possibilities: English, German, French and Polish. Select the language of your choice by tapping the corresponding area or using the arrows on the right. The now selected language appears as heading above the touch icons.

Concerning the tab **"User Mode"** you have the possibility to activate or deactivate this mode. You can choose between two modes: "Weld" and "Lab". The User Mode is only recommended for advanced users. It allows simplifying the use of the generator by hiding unessential parameters. For more information → see chapter 4.

The "EXIT" button leads back to the settings menu.

NB: The user mode is not available on cycle welding generators. In this case, the "User mode" tab will not be displayed in this screen as shown on the right.

3.21. Factory

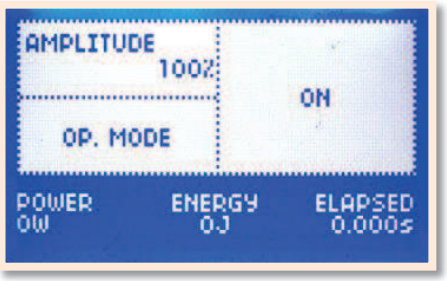
In this screen you have the possibility to set the generator to the factory settings. For this, you need the level 3 password.

4. User Mode

You can activate the User Mode through the "Setup" menu item, which you find in the settings menu. Tap the "User Mode" tab so that the User Mode selection screen appears (screenshot on the right).

As you can see, there are two different modes that are "Weld." and "Lab.". They offer different behaviours, as explained in the following chapters. The device enters the user mode as soon as you select one of the two modes.

Once you exit the menu, you will notice that the Start screen has changed to the screen on the right. Note that the layout of this screen is the same in both "Weld." and "Lab." modes.



You can only exit the User Mode by tapping the bottom corners 10 times alternately (left-right-left-right). This will lead you to the settings menu, where you will be able to turn the user mode off.

4.1. "Weld" user mode

The User Mode 1 provides the following functions:

- Operation in automatic mode, with preset amplitude
- Operation with preset energy, timer and/or cycle timer
- Switching the sonic on and off with the testbutton

On the left side in the middle there is the icon **"OP. Mode"**. The generator provides several modes:

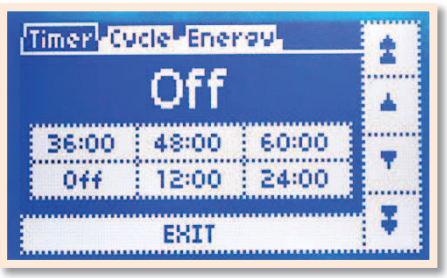
- Operation on preset energy
- Operation on preset time or cycle time

You can use these modes simultaneously. If one mode is set the "MODE" LED will blink.

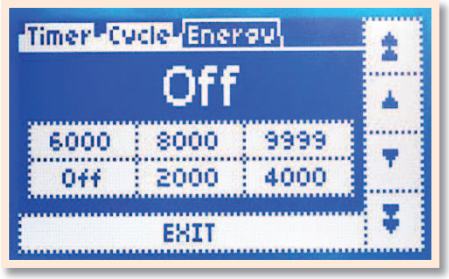
In this display you can navigate between three tabs "Timer", "Cycle" and "Energy", and adjust the desired values.

- ✓ "Timer": during this time the generator emits ultrasonic power. If the preset time is elapsed the generator automatically shuts off.
- ✓ The use of the "Cycle" timer is optional. If this mode is chosen, the generator is operating in a cycle mode (on-off-on-off). The cycle time is adjustable with the arrows on the right side of the display.
  Attention: the cycle value has to be set to a time less than the timer.
- ✓ Choosing "Energy" the generator operates in energy mode. If an energy is set, the generator turns off automatically when this energy is reached, e.g. during a welding process. If also a time is set with the timer, the generator turn off automatically either he has reached the time or the energy.

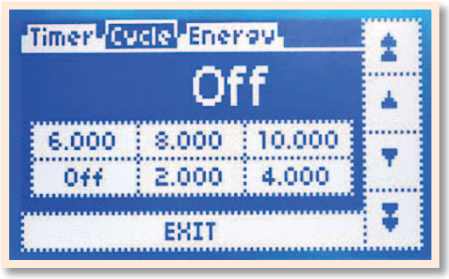
The adjustment of the values in every "Data input screen" is done the same way. 6 example values are arranged in an array, where the bottom left value is the minimum and the top right value the maximum. The arrow keys on the right side allow for coarse tuning (double arrows) and fine tuning (simple arrow).



"Timer"	
Valid interval	0(=off) – 60 min
Single arrow	Steps of 1 sec
Double arrow	Steps of 30 sec



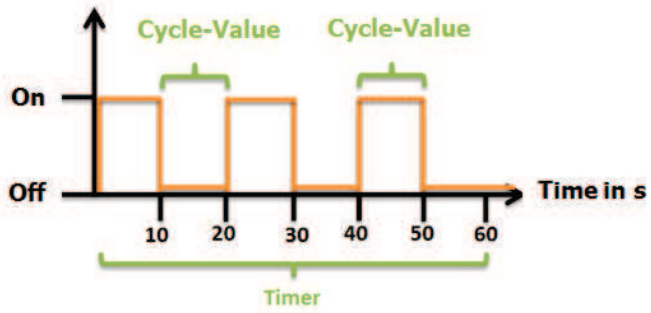
"Energy"	
Valid interval	0(=off) – 9999 J
Single arrow	Steps of 1 Joule
Double arrow	Steps of 100 Joule



"Cycle"	
Valid interval	0(=off) – 10 sec
Single arrow	Steps of 1 ms
Double arrow	Steps of 100 ms

Example for:

Timer = 1 min and
Cycle = 10.000 s



4.2. "Lab" user mode

This second User Mode provides the following functions:

- Operation in automatic mode, with pre-set amplitude
- Operation on pre-set time
- Switching the generator on and off with the virtual testbutton

On the left side in the middle there is the icon **"TIMER"**. The Timer corresponds to the time function in the normal mode, the "On Time". The generator emits power until the predetermined time value is reached. If a timer is set, the MODE LED will light up.

Proceed as usual to set this parameter.

"Timer"	
Valid interval	0(=off) – 60 min
Single arrow	Steps of 1 sec
Double arrow	Steps of 30 sec

Cycle welding mode

If your generator is configured for cycle welding, please take into consideration the following section in addition to the previous chapters.

1. Purpose of the feature

The cycle mode has been designed to be used together with ultrasonic welding presses that do not feature a built-in controller.

Controllers are commonly used in welding chains, to make them more efficient and to improve their cadence. In order to do this, the controller makes sure that the ultrasonic energy is automatically delivered to the sonotrode at specific periods of the welding cycle: during the welding time (when the pieces are pressed against each other) and optionally during an afterburst. Therefore, the welding cycles can be completed faster, without any waste of time.

Thanks to this helpful feature, the soniKKs Welding Generator can replace such a controller, giving your ultrasonic presses the "intelligence" they are lacking.

2. Status LEDs

The behaviors and meaning of the status LEDs of the generator are globally the same as described on page 5.

The only changes concern the "Error" LED and the "Mode" LED, which will work as follows.

Error – LED	• Welding Cycle mode **disabled**: - ON: an error occured • Welding Cycle mode **enabled**: - ON: an error occured - Blinking: the weld time has expired whereas the energy threshold has not been reached (see the Timing chart)
Mode – LED	• Welding Cycle mode **disabled**: - ON: the generator is set to a timer or energy mode. • Welding Cycle mode **enabled**: - ON: a welding cycle is ongoing.

3. Testbutton function

Please note that the virtual testbutton (in the Overview screen) will keep the same function whether the Welding Cycle feature is enabled or not.

The generator will emit ultrasonic power as long as the testbutton signal is active (see the Testbutton / Remote section, page 17). It cannot be used to start a cycle for instance.

Of course, the testbutton will be ignored during the welding cycles.

4. Beeper

When ON, the beeper will notify the user of the end of the welding cycles with a short signal.

5. Parameters of the welding cycle

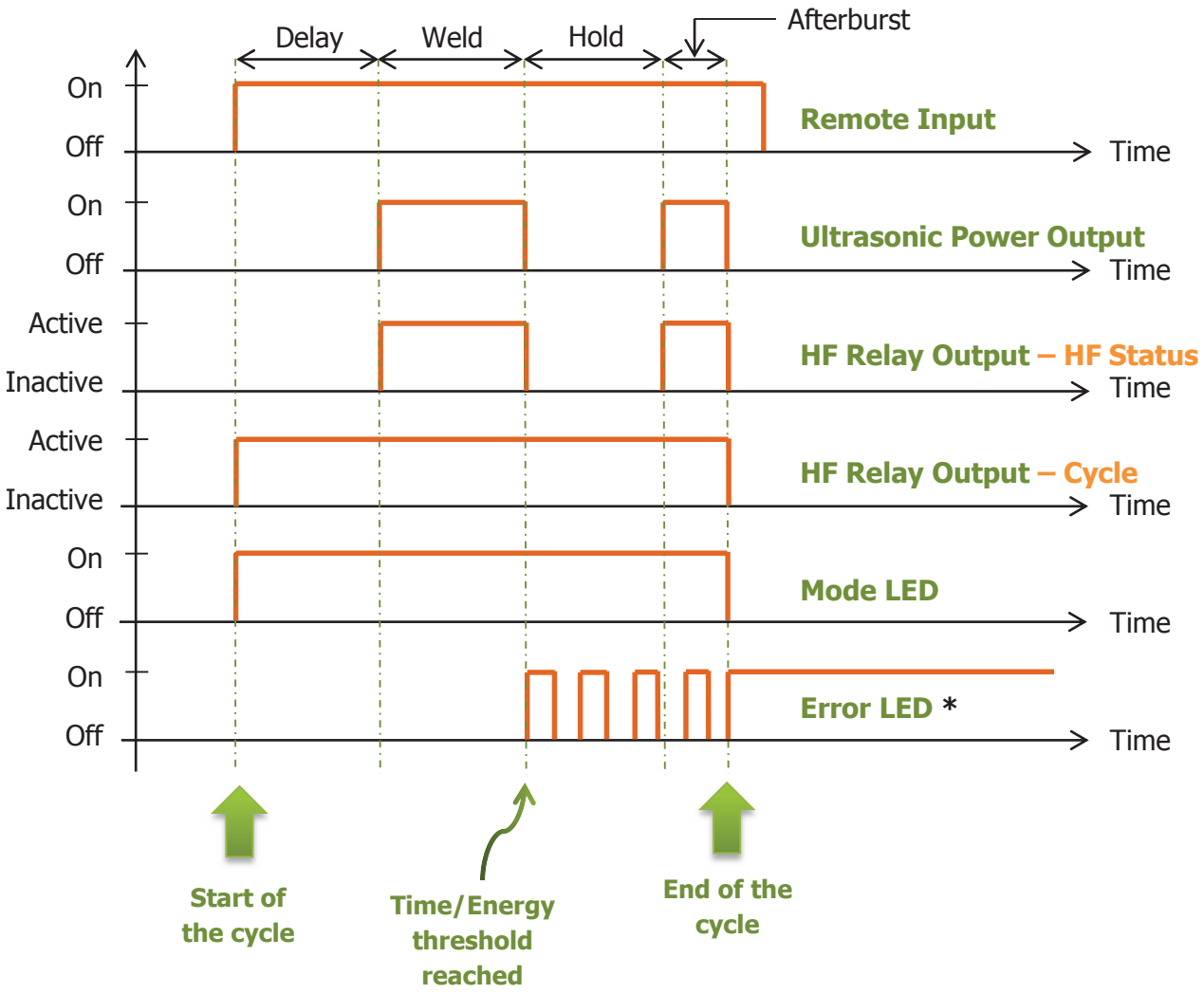
The welding cycle can include up to four steps, whose durations can be tuned by the user.
The different times of the welding cycle are:

- ✓ **Delay:** the delay between the moments the remote input is activated and the generator starts welding.
- ✓ **Weld Time/Energy:** the generator emits ultrasonic power until the specified time/energy threshold is reached. If both thresholds are set, the generator stops as soon as one of the two is reached.
- ✓ **Hold Time:** a delay time after the generator has stopped emitting ultrasonic power. This phase enables the press to hold the pieces while the weld cools down.
- ✓ **Afterburst:** the time during which the generator will emit ultrasonic power at the end of the cycle. The afterburst is used to remove the residues of material from the sonotrode.

In addition, the user can also configure the Sonic output relay to act as a cycle status (as explained on page 19). The output will then be active during the whole cycle, i.e. from the start of the delay phase to the end of the afterburst phase.

6. Timing chart

The graph below illustrates the welding cycle and its timings.



* This behavior only applies in the case when a Weld Time and a Weld Energy are both set, and the Weld Time expires before the Weld Energy is reached.

Handheld mode

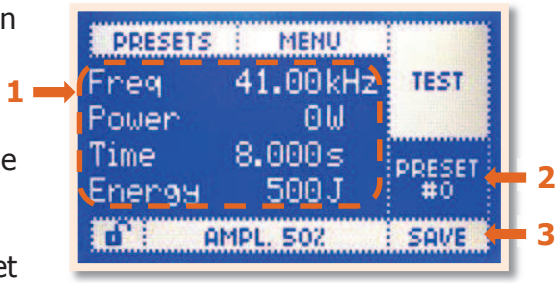
This mode has been especially developed for hand-welding applications. It allows the user to browse through the presets of the generator by simply double-clicking the handgun's trigger. By doing so, the next preset found in memory will be recalled.

All the user has to do then is to configure the different sets of parameters that he wants to use beforehand.

This mode can be activated/deactivated in the settings menu (see page 19). Note that the remote is automatically set to "Static" mode when the activating the handheld mode. Setting it to "Latch" or "Trigger" mode will deactivate the handheld mode.

1. Start Screen

When the handheld mode is active, the home screen changes to the one on the right.



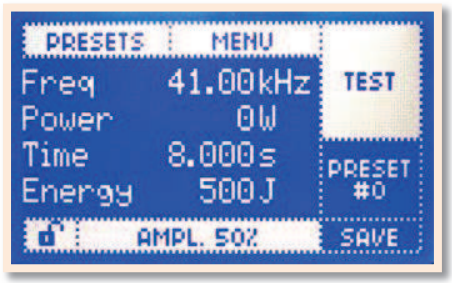
It contains, among others:

- an overview of the current parameters of the generator (1),
- an indicator of the currently active preset (2),
- a "SAVE" button (3) to overwrite the active preset with the current parameters.

The parameters stored in this mode are the Start Frequency (first line), the welding time (third line) and the welding energy (fourth line). You can modify each of them by touching the corresponding line.

Once you have modified them, the "SAVE" button allows you to store them in the indicated preset memory (here preset #0).

After pressing it, note that the "SAVE" button will be disabled (see screenshot on the right), meaning that the current parameters have been saved. It will be re-enabled if you modify the parameters again.



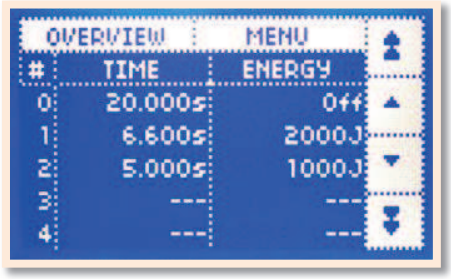
The preset indicator area has a second function. It can be used to cycle through the presets as one would do with by double-clicking the handgun's trigger. By touching the area, the next preset will be recalled.

ATTENTION: Make sure to save any modification before cycling to the next preset. All unsaved changes will be lost.

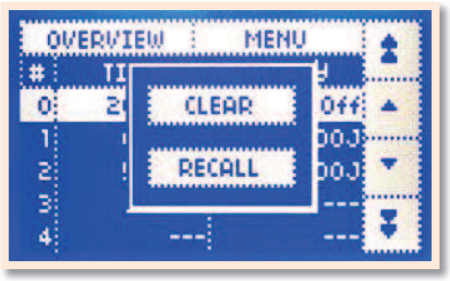
An additional screen makes it possible to visualize all the presets and to handle the memory the generator. It is reachable through the "PRESET" button on the top left corner.

2. Presets Screen

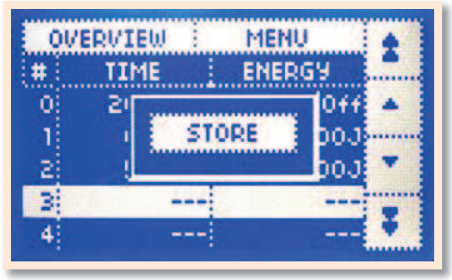
This screen allows having an overview of the presets stored in memory. The 32 preset slots' contents (only welding time and welding energy though) can be visualized here thanks to the arrows on the right of the screen.



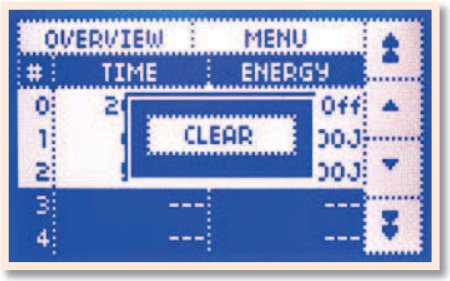
In addition, this screen allows clearing the slots, storing the current parameters in different slots, or recalling a preset without having to go through all of them.



These actions can be done by touching a line of the array. A pop up will then appear, asking you to choose an action. As you can see on the write, the selected preset is then highlighted in the background. Note that "CLEAR" will clear the slot #0 and this preset will no longer be available when cycling with the handgun's double-click feature.



As shown on the screenshot on the right, the actions are different depending on the slot you select. Touching an empty slot will only propose you to store the parameters in it for instance.



As for clearing several slots at once, this can be done by touching the first column of the array: i.e. the slot indexes. When selecting a first preset, the latter will be highlighted but no pop up will appear. Instead, you will have to select a second index. All the presets in-between will then be selected and the "CLEAR" button will pop up. In the screenshot on the right, indexes 0 and 2 (or the other way around) have been selected.

Note that you can leave the pop up without doing any action. For this, you just need to touch somewhere else.

Fault report and fault clearance

fault report	possible reason	repair
	➢ Transducer broken ➢ Short circuit at RF cable ➢ Error of the generator ➢ Start frequency too close to resonance frequency	➢ Replace transducer ➢ Replace RF cable ➢ Contact soniKKs ➢ Select a higher value for the start frequency
	➢ Fan broken ➢ Error of the generator	➢ Check if fan works ➢ Contact soniKKs
	➢ Transducer broken ➢ Error of the generator	➢ Replace transducer ➢ Contact soniKKs
	➢ Transducer not connected or broken ➢ Cable broken	➢ Connect or replace transducer ➢ Replace cable
	➢ Generator overloaded	➢ Reduce compacting power ➢ Use generator with more power

Change history

❖ **Generator firmware revision 1.12.395.3233**

The end of the welding cycle is now notified by an acoustic signal if the beeper is enabled.

Maintenance and care

There is no need for special maintenance! Please remove any dust and dirt with a damp woven fabric. Do not use any chemicals to clean the generator. Keep the cooling slots clear at all times.

Warranty

The period and extent of the warranty is part of the commercial terms and conditions. Special agreements are part of the confirmation of the order.

The warranty does not cover any malfunctions, injuries and damages that result from such use or improper operation in use.

Warranty exclusion applies in the following cases:

- Damage due to wrong handling or tampering
- Damage due to wrong application
- Damage due to shock, dirt or moisture
- Damage due to operation by nonqualified staff
- Damage due to nonobservance of safety regulations or accident prevention regulations
- Damage due to modifications to the operating manual

Imprint

Purpose and use

The operating instructions explain the handling and operation of the software for the linear amplifier in connection with standard accessories for use in laboratories and the industry.

Please read especially the safety instructions carefully and observe them all time.

The operating instructions should always be at hand, to help you to solve any questions and problems that may arise.

All rights reserved

The manual has been prepared with all due care, nevertheless faults and omissions cannot be fully precluded.
soniKKs GmbH reserves the right to make changes to the technical data and specifications during the curse of further development of the product. Without given prior notice.

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